Exemption No. 5236

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

EMBRAER EMPRESA BRASILEIRA DE AERONAUTICA S.A.

Regulatory Docket No. 26337

for an exemption from § 121.312(a)(2) of the Federal Aviation Regulations

PARTIAL GRANT OF EXEMPTION

By letters EC-240/90 dated August 9, 1990, and EC-241/90 dated August 15, 1990, Mr. Luiz Alberto Gomes de Figueiredo, Assistant of Certification, Embraer Empresa Brasileira de Aeronautica S.A., petitioned for exemption from § 121.312(a)(2) of the Federal Aviation Regulations (FAR) on behalf of current and future U.S. operators of the EMB-120 to permit operation of 35 airplanes which do not fully comply with the heat release and smoke density requirements for interior materials as specified in the regulation. This exemption would permit the operation of 35 airplanes, whose dates of manufacture are after August 20, 1990, with certain specified interior components that do not comply with the heat release and smoke emissions requirements of § 121.312(a)(2).

The EMB-120 is a twin engine turbopropeller-powered airplane approved for a maximum seating capacity of 30 passengers. The type certification basis of the airplane does not include Amendment 25-66 to Part 25 of the FAR.

Section of the FAR affected:

> Section 121.312, as amended by Amendment 121-198, requires, in part, that certain large surface-area cabin interior components of certain airplanes used in U.S. air carrier service must comply with the flammability and smoke emission standards of § 25.853 of Part 25 of the FAR. Airplanes manufactured on or after August 20, 1990, must comply with definitive standards of a maximum peak heat release rate of 65 kilowatts per square meter, a maximum total heat release of 65 kilowatt-minutes per square meter, and specific optical smoke density, D_2, of 200 (65/65/200). Those manufactured on or after August 20, 1988, but prior to August 20, 1990, are not required to meet the 65/65/200 standards of

§ 25.853; however, they must comply with interim standards of a maximum peak heat release rate of 100 kilowatts per square meter and a maximum total heat release of 100 kilowatt-minutes per square meter (100/100) in order to be used in U.S. air carrier service. The date of manufacture, as used in § 121.312, is the date on which inspection records show that an airplane is in a condition for safe flight. This is not necessarily the date on which an airplane is in conformity to the approved type design or the date on which a certificate of airworthiness is issued since some items not relevant to safe flight, such as passenger seats, may not be installed at that time. It could be earlier, but would certainly be no later than the date on which the first flight of the airplane occurs.

Related sections of the FAR:

Section 135.169 of Part 135 of the FAR, as amended by Amendment 135-31, requires, in part, that large airplanes, except for commuter category airplanes, must meet the requirements of § 121.312. Any exemption from the provisions of § 121.312 would provide the same relief for Part 135 operators.

Section 25.853 of Part 25 of the FAR, as amended by Amendment 25-66, requires, in part, that airplanes for which an application for type certificate is made after September 26, 1988, must comply with the 65/65/200 standards described above using the test apparatus and procedures specified in Part IV and V of Appendix F.

Parts IV and V of Appendix F of Part 25 specify the test apparatus and procedures to be used in showing compliance with the rate of heat release and smoke emission requirements of § 25.853, respectively. Heat release testing must be conducted using the Ohio State University (OSU) radiant rate of heat release apparatus; smoke testing must be conducted using the National Bureau of Standards (NBS) smoke chamber.

The petitioner's supportive information is as follows:

Embraer has contracted with the supplier of much of its interior panel furnishings to conduct the required testing. Due to an extensive backlog at the supplier, the test schedule was not compatible with the compliance dates. Embraer then attempted to utilize another test laboratory, but the results were not considered reliable in light of the earlier test results from the material supplier. The resulting delay in testing has caused certain of the material samples to require substantiation after the compliance date, and certain other of the samples which were expected to pass the tests to require replacement due to higher than expected test values.

An additional factor which has delayed the incorporation of some materials involves the requirements of the smoke emission standard incorporated by Amendment 25-66. This standard calls for a maximum specific optical density measurement (D_s) of 200. Due to the various nuances of the test method and the degree of variability in configuration of different test laboratories, the FAA established guidance concerning the acceptable test values. In summary, this guidance stated that materials with a D_s of 160 or less would be acceptable regardless of any refinements made to the test apparatus or method. Values above this would be subject to review and possible retest depending on the changes that resulted from detailed examination of the test. The test lab used by Embraer applied this guidance by rejecting material combinations with test results over 160. Consequently, several materials which may, in fact, be satisfactory were initially rejected causing further delay to the program.

Embraer requests an exemption to allow the entry into service of 35 EMB-120 airplanes for an additional 8 months after August 20, 1990. The 8 month time was determined as follows:

1. Two months to complete the tests and issue the necessary test report.

2. Three months for material delivery.

3. Three months for implementation into the production line.

Embraer considers that this exemption is in the public interest for the following reasons. The airplanes subject to exemption will be manufactured to at least the same build standard as prior EMB-120's, with material upgrades in most of the cabin. All of the materials comply with the earlier heat release standards of § 121.312 in effect on August 20, 1988 (100/100). Further, the components that would be affected by the exemption comprise only 10 percent of the cabin surface. Therefore, the overall effect in the event of a fire is likely to be negligible. The parts which have yet to be tested are constructed from materials which are known to have favorable heat release and smoke emission characteristics and therefore there is every expectation that these parts will pass the testing when it is conducted.

In addition, grant of this exemption will permit delivery and operation of 35 airplanes which would otherwise be grounded because of the non-compliant/non-substantiated materials. The resulting economic hardship would affect both U.S. carriers and the flying public by making certain flights unavailable and increasing the cost of operation.

Finally, Embraer notes that exemptions have been granted to other airframe manufacturers to permit the use of non-compliant materials.

In response to FAA requests for clarification, Embraer submitted the following additional supportive information in their letters EC-295F/90 dated August 17, 1990, and EC-263/90 dated September 4, 1990.

Recently completed tests by the supplier and a minor modification to one family of parts results in a reduction of the number of non-compliant parts to one. This part is the cargo bulkhead which separates the passenger compartment and the cargo compartment and represents approximately 5 percent of the cabin materials required to comply with § 121.312(a)(2).

Embraer proposes to issue a service bulletin to replace the bulkhead with a bulkhead which complies with the regulations by March 1991. Embraer also proposes to begin production of the replacement bulkheads in April 1991. Their schedule would result in the thirty-fifth bulkhead being produced in February 1992.

The FAA finds, for good cause, that action on this petition should not be delayed by publication and comment procedures for the following reasons: (1) a grant of exemption would not set a precedent in that this matter involves unique circumstances of this manufacturer's efforts to achieve compliance prior to the deadline established by the regulation, and (2) delay in acting on the petition would be detrimental to the petitioner in that it would necessarily delay delivery of a number of aircraft.

The FAA's analysis/summary is as follows:

The FAA has carefully reviewed the petitioner's arguments and has determined that there is sufficient merit to warrant a partial grant of exemption. The FAA notes, however, that the primary need for the exemption has resulted from logistical problems between Embraer and the test facility, not from any technological difficulty in complying with the regulation. Some of these problems may be due, in part, to confusion as to the requirements for compliance with smoke emission requirements; however, some of the scheduling problems cannot be attributed to this cause since there are also heat release tests which have yet to be accomplished. The FAA considers that a more aggressive effort on the part of the petitioner to obtain satisfactory testing may have obviated the need for an exemption.

The other exemptions referred to by the petitioner were granted to manufacturers under different circumstances than exist here. In those cases, the exempted airplanes were those which, through unusual chains of events, were manufactured after the compliance date in § 121.312, even though they had been scheduled to be manufactured well before that date. Thus, those were airplanes which would not have had to comply with the regulation in any case, and the net impact on the fleet was nil.

The FAA considers that the permanent introduction into the fleet of 35 airplanes which should have, but have not, complied with § 121.312(a)(2) is not in keeping with the intent of the regulation. Therefore, while the airplanes will be permitted to enter service on schedule with the cargo bulkhead not substantiated for compliance, the FAA will require that this item be replaced with a part that is in compliance. In reviewing information provided by the petitioner, the FAA has established a May 31, 1992, date for compliance with § 121.312(a)(2) in total. Airplanes which are granted relief under the terms of this exemption will be required to show compliance on that date to remain in service.

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest, and will allow operation of the EMB-120 airplanes for a limited period without an adverse impact on safety. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the petition of Embraer Empresa Brasileira de Aeronautica S.A. to exempt them from compliance with § 121.312(a)(2) of the FAR is granted, with the following provisions:

1. This exemption is limited to 35 airplanes to be delivered between August 20, 1990, and April 20, 1991, with serial numbers as follows:

   199, 202, 203, 205-207, 210-212, 216-219, 221-231, 233, 234, 236-240, 242-245.

2. The authority to operate the above airplanes with interior materials that do not comply with § 121.312(a)(2) expires on May 31, 1992.

3. The materials which are exempted are limited to those contained in the cargo bulkhead separating the passenger cabin from the cargo compartment.

Issued in Renton, Washington, on September 14, 1990.

Original signed by:
Darrell M. Pederson

Acting Manager
Transport Airplane Directorate

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Revised 9/4/90:editorial review:ps
Revised 9/5/90:input from Gary Killion and new Embraer information:ft
Revised 9/6/90:input from GK:ft
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New directory: F:\HOME\PLS\RULES\EMBRAER.EXM